current need not be provided in order for the claim to be infringed, but literally only substantially an equal magnitude bias current would be required. In other words, the term "substantially" broadens the claim to include other bias currents that are not equal to each other. In view that the word "substantially" does modify the meaning of each claim, such claims are further limited by the inclusion of such word. For these reasons, it is believed that Claims 5, 7, 11, and 16 fully comply with the patent statutes and rules. The undersigned is unaware of any rule of practice that requires each word of a claim to further limit the claim.

Rejections Under 35 U.S.C. §103

Claims 1 - 3 and 5 - 17 are rejected under 35 U.S.C. §103(a) as being obvious over the Busking reference in view of the Pakonen reference. The discussion below illustrates the manner in which the claimed invention distinguishes from the combined teachings of the cited references.

The Preferred Embodiment of the Invention

One of the features of Applicant's claimed invention is that the temperature compensating circuit does not present a load to the RF detector, thereby allowing RF signals to be better detected at low power levels, and enhancing the operation of the RF transmitter. As noted in the background of Applicant's captioned application, RF detectors and temperature compensation circuits are well known in the art, as are directional couplers utilized in RF output circuits. However, the prior art has not appreciated the manner in which RF detectors, temperature compensation circuits and directional couplers can be utilized to reduce or eliminate the loading effects of the temperature compensation circuit on the RF detector circuit. Applicant was the first to appreciate that by coupling the compensation circuit to the reverse sensing terminal of the coupler, the current through the detector circuit can be temperature compensated, but without the ill effects of loading thereon.

The Cited Prior Art

In the primary reference cited in the rejection of the claims, the Busking reference, the object is to obtain a less complex and expensive construction of temperature compensated detectors, as compared to other circuits utilizing current mirrors. In the Busking reference, there is disclosed the use of a directional coupler 22. However, only the forward sensing port is connected to the detector and the temperature compensation circuit. The reverse sample port is simply terminated in a resistor R1. No DC signals, and indeed no temperature compensation signals, are coupled through the directional coupler.

With reference to the Pakonen reference, there is no mention or hint of reducing the loading by a temperature compensation circuit on the RF detector circuit. Indeed, the Pakonen reference does not even disclose the use of any temperature compensation at all. Rather, the Pakonen reference facilitates the sensitivity of the directional coupler at high power levels and low power levels, but without the use of temperature compensating circuits. In reconfiguring the circuit to take into account high and low power levels, the Pakonen circuit biases a PIN diode 24, or a semiconductor transistor 32, so that a portion of the output power delivered to the antenna can be coupled back as AC signals through the reverse port of the directional coupler to the forward port. By the application of one of two bias levels, the PIN diode or the transistor can be effectively made to vary in resistance, thereby coupling a specified amount of output power in the reverse direction through the coupler.

Importantly, the only signal coupled in the reverse direction through the coupler are AC signals at the output of the power circuit. There is no coupling of DC signals whatsoever and indeed no DC signals for temperature compensation.

In view that the reference doesn't suggest solutions to the problem of loading on detectors by temperature compensation circuits, one skilled in the art would not rearrange the components to achieve the feature, as claimed. Moreover, because the Pakonen reference does not even address either the loading concerns or the temperature compensation concerns, no teachings whatsoever in such reference can aid

one skilled in the art to modify the Busking circuit to achieve Applicant's claimed invention. In view of the foregoing, Claim 1 cannot be realized by a proper combination of the teachings. As such, a prima facie case of obviousness has not been established.

Claim 2 is believed to be patentable for the same reasons noted above in connection with Claim 1. With regard to the rejection of Claim 2, it is noted that the Busking reference appears to disclose a standard directional coupler, identified by reference numeral 22. In Fig. 2, it appears as though the horizontal line noted by reference numeral 22 is the main conductor of the directional coupler, whereas the parallel line thereunder appears to be the conductor having the forward sensing port identified by reference numeral 26, and the resistor R1 coupled to the reverse sensing port. Nonetheless, it is believed that Claim 2 is patentable in the same manner as Claim 1.

Claim 3 is believed to be patentable in its own right over the cited prior art. With regard to the Busking reference, both the temperature compensating diode and the detector diode are coupled to and related to the operation of the forward sensing port of the directional coupler. There is no suggestion in either the Busking reference or the Pakonen reference of connecting any temperature compensation circuit to the reverse sampling port, or to any other port of the directional coupler. Indeed, and as noted above, the Pakonen reference only utilizes the reverse sampling port for coupling AC signals therethrough, via the coupling capacitor 20. Thus, even if some type of compensation circuit were to be integrated with the power level switching circuit, any DC compensating current could not be coupled back through the directional coupler to the detector circuit. As such, no prima facie case of obviousness has been established with regard to Claim 3.

Although it is noted at Page 4 of the Office Action that the Busking detector is connected to terminal 22 and the temperature compensation circuit is coupled to terminal 26 of the directional coupler, this is not an accurate portrayal of the reference. Indeed, both the temperature compensation circuit and the detector are coupled to the

same directional coupler terminal, namely terminal 26. It is noted that diode D2 functions as a detector, and diode D3 functions as the temperature compensation diode.

Claim 5 is believed to be patentable for the same reasons noted above in connection with Claim 1.

The Examiner considers that Claims 7 and 9 are obvious in view of the Busking reference in that there is disclosed in the "background" section thereof the use of constant current sources. However, the Examiner has suggested no manner in which the use of constant current sources in mirror type of devices can be utilized to reduce the loading of an RF detector by the temperature compensation circuit. The mere mention of current sources utilized in current mirror devices does not make obvious the invention of Claims 7 and 9.

It is to be further noted that Claims 7 and 9 specify that the current be constant. This is set forth in the specification of the captioned application at Page 12, Lines 1 - 18. A constant current source can be established by utilizing a reference voltage and a high value series resistor 58. The use of a current source appears to be in sharp contrast to the biasing utilized in the Busking reference, where only a bias voltage is applied to terminal 70. There is no hint or mention that the resistor R2 is a large value to thereby provide a constant current through diodes D2 and D3. Thus, a prima facie case of obviousness has not been established.

Claim 8 is believed to be patentable for the same reasons noted above in connection with Claims 7 and 9.

Claim 10

Claim 10 specifies the utilization of a directional coupler, with a detector circuit coupled to a forward sample port thereof and a temperature compensation circuit coupled to the reverse sample port. In the rejection of Claim 10, it is stated that the Busking reference fails to disclose a forward sample port and a reverse sample port. However, it is believed that this conclusion is in error, as there are disclosed such

ports, but with a different terminology. Indeed, Busking discloses the use of a sense output 26 which corresponds to a forward sample port. Moreover, Busking discloses a terminator output to which the resistor R1 is connected (Col. 2, Lines 23 - 26). While the Examiner is correct in concluding in the Busking reference that the detector is coupled to the forward sample port 26, the conclusion is erroneous that the temperature compensation circuit is coupled to the reverse sample port. As is clearly seen in Fig. 2 of the Busking reference, the only component connected to the reverse sample port (i.e., the terminator output) is the termination resistor R1. Thus, as far as the teachings of the Busking reference are concerned, both the detector circuit and the temperature compensation circuit are combined together and connected to the forward sample port.

While the Pakonen reference does disclose the connection of circuits to both the forward sample port and the reverse sample port of a directional coupler, there is no temperature compensation circuit whatsoever utilized in the Pakonen reference. Indeed, the only circuit connected to the reverse sample port is a circuit to enhance the sensitivity of the transmitter output sensing circuits, based on high and low power levels. Thus, as between both the Busking and Pakonen references, there is no suggestion whatsoever of utilizing or otherwise coupling a temperature compensation circuit to the reverse sample port of a directional coupler. Indeed, if one skilled in the art were to employ the teachings of a temperature compensation circuit in either of the cited references, such temperature compensation circuit would be utilized together with the detector, and coupled to the same port of the directional coupler, as suggested by the Busking reference. For the foregoing reasons, a prima facie case of obviousness has not been established with regard independent Claim 10.

Claims 11 and 12 are patentable for the same reasons noted above in connection with independent Claim 10.

Independent Claim 13

Claim 13 is rejected based on some of the same reasons as noted in the rejection of independent Claim 11. Although Claim 13 is a method claim, the method steps thereof are similar to the limitations of independent apparatus Claim 11, and are patentable for the same reasons. In view that neither reference suggests the utilization of a temperature compensation circuit coupled to the reverse sample port of a directional coupler, it cannot be obvious to one skilled in the art to connect the circuit in such a manner. Despite the Examiner's conclusion of obviousness, there is no evidence of record that would lead one skilled in the art to come to such conclusion. Obviousness can only be established on facts that have a basis in the cited prior art. If there is no factual basis in the prior art for supporting a conclusion by the Examiner, then the rejection cannot stand. See *In re: Warner*, 154 USPQ 173, 177 (CCPA 1967).

Dependent Claims 14 and 15 are patentable for the same reasons noted above in connection with Claim 13.

Independent Claim 16

Claim 16 has been rejected for many of the same reasons as independent Claims 11 and 13. For the same reasons set forth above in connection with Claims 11 and 13, Claim 16 is patentable over the cited prior art.

Claim 16 additionally includes the limitation of a current source configured to source substantially the same amount of current between the first and second semiconductor diodes as the temperature changes. As noted above in connection with the Pakonen reference, no temperature compensation circuit is suggested, nor is there any current that remains the same as the temperature changes. As such, a prima facie case of obviousness has not been established.

Claim 17 is believed to be patentable for the same reasons noted above in connection with Claim 16.

Conclusion

From the foregoing, it is believed that a prima facie case of obviousness has not been established with regard to the claims. Insofar as the references do not provide a sufficient factual basis upon which the rejections of obviousness can be sustained, the claims are patentable over the cited references. The Examiner is respectfully requested to reconsider the rejections in view of the foregoing and grant full allowance of the claims.

Respectfully submitted,

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